

Technical Memorandum

TO: Neil Thompson, U.S. Environmental Protection Agency
Mike Kuntz, Washington State Department of Ecology

FROM: Lawrence D. Beard, P.E. *for JOB*
Landau Associates, Inc.

RE: COLBERT LANDFILL RD/RA PROJECT
CHANGES TO THE PHASE I AIR MONITORING
AND AIR MODELING ACTIVITIES

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INTRODUCTION

On August 1, 1990, a meeting was held at EPA Region 10 offices in Seattle, Washington. The purpose of the meeting was to discuss modifications to the scope of Phase I air monitoring and air modeling activities for the Colbert Landfill Project (Project). The meeting was attended by Mike Kuntz and Clint Bowman of the Washington Department of Ecology (Ecology); Neil Thompson, Marsha Lee, and Rob Wilson of the U.S. Environmental Protection Agency (EPA); Lyle Diedieker of Ecology and Environment; Dean Fowler of Spokane County; and Larry Beard of Landau Associates.

The meeting was held at the request of Spokane County (and Landau Associates) because recent discussions with EPA and Ecology air quality personnel indicated that the scope of Phase I air monitoring and air modeling, described in previously approved work plans, varied from procedures typically used by EPA for assessing air quality impacts. The purpose of the meeting was to develop a scope for air quality assessment that is consistent with EPA guidance, and acceptable to both the regulatory agencies and Spokane County.

BACKGROUND

Section V.D. of the Colbert Landfill Consent Decree Scope of Work (SOW) specifies that the need for air stripping tower offgas abatement during Phase II will be evaluated based on lifetime cancer risk (for carcinogenic compounds) and hazard indices (for noncarcinogenic compounds). Offgas treatment will not be required if increased carcinogenic risk and hazard indices are below 10^{-6} and 1, respectively. Preliminary air modeling (accomplished during negotiation of the SOW), using a simple Gaussian model, estimated lifetime cancer risk and hazard indices to be 3.5×10^{-7} and 1.4×10^{-4} , respectively. However, the analyses were based on limited data, and the SOW specified that additional air monitoring and air modeling would be accomplished during Phase I to refine this preliminary assessment.

The scope of Phase I air quality assessment activities was presented in the Quality Assurance Project Plan (Landau Associates, September 1989) and the Treatment and Discharge Plan (Metcalf and Eddy, July 1990). The scope includes:

- Collecting and analyzing a limited number of ambient air quality samples during operation of the Phase I East System pilot studies
- Collecting onsite meteorological data, including wind speed, wind direction, ambient air temperature, barometric pressure, and precipitation
- Accomplishing air dispersion modeling using onsite meteorological station data and National Weather Service (NWS) data from the Spokane International Airport, and calibrating the modeling results to the air quality data collected during the East System pilot studies.

This scope was reviewed and approved by EPA and Ecology as part of the Phase I Work Plan review process.

SCOPE MODIFICATIONS

Discussions during the October 1 meeting resulted in a number of agreed to changes for the Phase I air monitoring activities. Additionally, some minor modifications were made to the proposed air modeling activities, and a more clearly defined approach to air modeling was also agreed to. The following subsections describe these agreed to changes. Modifications to existing work plans required to bring the existing work plans into conformance with the agreed to scope are presented in Attachment A.

AIR QUALITY MONITORING

The accuracy of air quality models for stack emissions, such as those that would result from an air stripping tower, is well documented and does not typically require verification using ambient air quality monitoring. As a result, air quality monitoring during Phase I activities will not be required.

METEOROLOGICAL DATA COLLECTION

EPA guidance recommends that at least 1 year of meteorological data be obtained for air quality modeling purposes, including onsite meteorological data (if used). However, it will not be possible to assess the need for onsite meteorological data until Phase I field activities are near completion. Because at least 1 year of onsite meteorological data would be required, it is necessary to initiate collection of meteorological data as soon as practicable to avoid potential project delays, even though the data may not be needed.

A meteorological station was set up at the Colbert Landfill site in April 1990. This meteorological station was set up and operated in a manner consistent with NWS data collection procedures. However, EPA guidance on meteorological data collection for regulatory modeling

applications (EPA/450/14-87/013) recommends equipment specifications and data collection methods that are different than those presently in use at the site. As a result, modifications to the existing meteorological station will be accomplished to conform to EPA guidance. The following decisions on the scope for meteorological data collection and the data collection methods were made with the concurrence of EPA and Ecology representatives:

- A quality assurance (QA) plan for meteorological data collection will be developed and submitted to EPA and Ecology for review and concurrence
- Meteorological equipment and data collection methods will be in conformance with applicable EPA guidance
- Meteorological parameters to be monitored include horizontal wind speed and wind direction and ambient temperature; temperature difference will not be monitored
- A 10-meter tower height for collecting wind speed and wind direction will be adequate for the project
- The meteorological station can either be left at its existing location (providing the surrounding soil piles are flattened appropriately), or the unit can be located on top of one of the flattened mounds; Landau Associates has decided to leave the meteorological station at its present location.

AIR MODELING

EPA guidance (EPA/450/4-88/010) suggests a three-phase approach for air quality modeling:

- Phase 1: Simple screening procedure (screening modeling)
- Phase 2: Detailed screening procedure (basic modeling, if needed)
- Phase 3: Refined analysis (refined modeling, if needed).

The health risk assessment requires evaluation of exposure over a 75-year period and the project life (assumed to be 30 years) for carcinogenic risk and hazard indices, respectively. These time spans preclude the use of screening modeling (Phase 1). However, annual average concentrations calculated using basic modeling (Phase 2) procedures, or equivalent procedures, are appropriate for evaluating health risk. The following decisions regarding the approach to air modeling were made with the concurrence of EPA and Ecology representatives:

- The Industrial Source Complex (ISC) air dispersion model is appropriate for use on the Project
- The health risk assessment will be based on annual average concentrations
- The initial air dispersion modeling will be accomplished using basic modeling (Phase 2) procedures, and NWS STAR summary data from the Spokane International Airport will be used for meteorological data input
- If the results of the basic modeling are inconclusive, refined modeling (Phase 3) will be accomplished. Refined modeling will follow the same procedures as basic modeling, except onsite meteorological data will be used instead of NWS data.

CONCLUSIONS

Because of the need for long-term onsite meteorological data collection, it is important that EPA and Ecology promptly identify any air quality issues where their understanding differs from that expressed in this memorandum. If any such disagreements are not identified by November 12, Spokane County will proceed with implementation of the air monitoring and modeling scope described herein. Changes to the scope for air quality assessment identified after November 12 may result in delay to design and construction of the Phase II system.

The work plan modifications described in Attachment A constitute Landau Associates' understanding of how the decisions described in this memorandum affect the existing work plans. Because the Project is in the advanced stages of Phase I activities, revising the work plans and submitting a new copy to EPA and Ecology does not appear warranted. As a result, the changes described in Attachment A will serve as documentation for these work plan modifications. If appropriate, these modifications will be incorporated into the Phase II work plans.

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Attachment

ATTACHMENT A

The elimination of Phase I air quality monitoring will result in the following Phase I Work Plan modifications:

- **Quality Assurance Project Plan**
 - Remove all references in the document to NIOSH
 - Section 1.3, page QA-1-5: Remove all references to air quality monitoring from Project Objective 2
 - Section 3.1, page QA-3-4, Table QA-3.2: Delete reference to air as a sample matrix
 - Section 4.2, page QA-4-2, Table QA-4.1: Delete air as a sample matrix
 - Section 6.1, page QA-6-1: Delete the last sentence of Paragraph 2
 - Section 6.2, page QA-6-2: Delete the reference to air sampling pumps in the first sentence of the first paragraph. Delete the third sentence of the first paragraph
 - Section 6.2, page QA-6-4, Table QA-6.2: Delete the reference to air sampling pump
 - Section 7.0, page QA-7-4, Table QA-7.2: Delete table.
 - Section 9.1.1, pages QA-9-1 and QA-9-2: Delete the last sentence of the section
 - Section 9.1.2, page QA-9-2: Delete the last sentence of the section
 - Section 9.1.3, page QA-9-2: Delete the last sentence of the section
 - Section 9.1.4, page QA-9-3: Delete the last two sentences of the section
 - Section 9.1.5, page QA-9-3: Delete the last sentence of the section
 - Section 9.1.6, page QA-9-4: Delete the last sentence of the section
 - Section 9.1.8, page QA-9-4: Delete the second paragraph of the section
 - Section 13.0, page QA-13-2: Delete the second to last sentence of the first bullet
 - Delete the third reference from the reference list
 - Appendix QA-A, Section 1.0, page FS-1-1: Delete the reference to air as a sample medium in the first sentence of the second paragraph
 - Appendix QA-A, Section 3.0, page FS-3-2: Delete the fifth bullet
 - Appendix QA-A, Section 3.0, page FS-3-3: Delete the last sentence of the second paragraph
 - Appendix QA-A, Section 3.0, page FS-3-5, Table FS-3-1: Delete reference to air samples

- Appendix QA-A, Section 4.0, page FS-4-1: Delete reference to air sampling in the first sentence
- Appendix QA-A, Section 4.1, page FS-4-2, Table FS-4-1: Delete reference to air matrix
- Appendix QA-A, Section 4.3: Delete section and all subsections
- Appendix QA-B: Remove the air sampling data sheet.
- Phase I Treatment and Discharge Plan:
 - Section 2.5, page TD-2-30: Modify the first paragraph to indicate that the necessity for air emissions abatement will be determined using meteorological data, but not onsite air quality data
 - Section 2.5.2: Delete the last sentence
 - Section 2.5.3: Delete the reference to air sampling in the first sentence of the first paragraph. Delete the reference to air quality sampling in the second sentence of the first paragraph
 - Section 2.5.3: Delete the third and fourth paragraphs
 - Section 2.5.4: Delete the section.

The changes to the meteorological data collection activities described in the technical memorandum result in the following change to the Treatment and Discharge Plan:

- Section 2.5.2: The third sentence needs to be modified to indicate horizontal wind speed and wind direction, and ambient air temperature data will be collected at the onsite weather station.

The air modeling procedures described in the technical memorandum result in the following changes to the Treatment and Discharge Plan:

- Section 2.5: The first paragraph needs to be modified to indicate that air modeling will first be accomplished using NWS data from the Spokane International Airport, and if needed, air modeling will be accomplished using onsite meteorological station data
- Section 2.5.2: The section needs to be modified to indicate that the meteorological data required will be obtained from the NWS for basic modeling, and will be collected from the onsite weather station for refined modeling (if needed).